

App. No. 10/065,552
Amendment dated August 17, 2005
Reply to Office action of May 17, 2005

REMARKS

Summary of Amendments

Claims 1, 6 and 13 have been canceled.

Claim 14 has been amended to positively set forth subject matter previously recited in the preamble of this claim.

Claims 2, 4 and 5 have been amended to depend from claim 14; and claims 8-12 have been amended to accord with the amendments to claim 14, since claim 8 also has been amended to depend from claim 14 and claims 9-12 now depend indirectly from claim 14.

Rejections under 35 U.S.C. § 103

Claims 1 and 4; Miller '489 in view of Murakami et al. '101

Claims 1 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 3,803,489 to Miller in view of U.S. Pat. No. 6,501,101 to Murakami et al.

Claim 1 has been canceled, and claim 4 has been amended to depend from claim 14, which, for the reasons set forth below in addressing the rejection of this claim, is believed to be in condition for allowance. Therefore, it is respectfully submitted that claim 4 now depends from an allowable base claim.

Claims 2-3, 5-6, and 14; Miller '489 in view of Murakami et al. '101, and further in view of Endrédi et al. '266

Claims 2-3, 5-6, and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Miller '489 in view of Murakami et al. '101, and further in view of U.S. Pat. No. 5,237,266 to Endrédi et al.

Claim 6 has been canceled. To address the rejection of claim 14 first, it is noted that the Office action states, at the bottom of page 4 and the top of page 5,

With regard to claims 6 and 14, . . . Miller modified by Endredi et al. also disclose [in addition to the limitations recited in claim 1] . . . placing the wafer 11c on an opening in the cell so as to put the liquid 31c in superficial contact with the wafer 11c to allow the liquid 31c to function as an electrode (col. 6, lines 22-67 [sic—37?] and Fig. 5).

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Nevertheless, claim 14 now recites a step of "equipping a C/V analyzer with a light-receiving-windowless electrolyte cell having an opening for electrolyte-wafer contact," a step of "preparing a semiconductor wafer composed of an In-containing compound and superficially onto which at least one In-containing-compound semiconductor layer has been heteroepitaxially grown," and a step of "placing said wafer on said opening in the electrolyte cell so as to put the liquid in superficial contact with the wafer to allow the liquid to function as an electrode."

In column 6, lines 13-16, Miller states that his "technique was found to work satisfactorily with *n*- and *p*-type silicon, with gallium arsenide, and with gallium phosphide." Nowhere does Miller teach or suggest that his technique could be applied satisfactorily to "a semiconductor wafer composed of an In-containing compound and superficially onto which at least one In-containing-compound semiconductor layer has been heteroepitaxially grown," as in claim 14.

Moreover, although not explicitly stated so under this section of the current Office action, even if Murakami et al. as applied to the rejection of claim 1 is meant to extend to the rejection of claim 14, a person skilled in the art applying the methods taught by Miller would not carry out the steps of "equipping a C/V analyzer with a light-receiving-windowless electrolyte cell having an opening for electrolyte-wafer contact," and of "employing applied voltages, including at least a maximum voltage that surpasses 10V but is not greater than about 60 V, to profile the wafer's C/V characteristics." In column 5, lines 54-63, Miller in fact teaches away from using his water-electrode based apparatus with the C/V technique.

It is respectfully submitted that the cited prior art does not disclose the unique combination of method steps now recited in claim 14, and that claim 14 should be held allowable over the prior art of record. In turn, claims 2, 3 and 5 have been amended to depend directly or indirectly from claim 14, and should thus be allowable as depending from an allowable base claim.

Finally, it is respectfully submitted that the amendments to claim 14, as outlined below, do not raise new issues, but simply present in clear, positively recited form subject matter that has been before the examiner during the course of the prosecution to date.

That is, claim 14 has been amended to:

- a) Clearly recite the nature of the method being claimed: "A non-invasive, semiconductor-wafer carrier concentration profiling method";
- b) Shift the recitation, "utilizing a C/V analyzer including a light-receiving-windowless cell"

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from the preamble to the body of the claim, by rendering this recitation as an additional method step:

"equipping a C/V analyzer with a light-receiving-windowless electrolyte cell having an opening for electrolyte-wafer contact";

- c) Shift the recitation,
"composed of an In-containing compound and superficially onto which at least one In-containing-compound semiconductor layer has been heteroepitaxially grown"

from the preamble to the body of the claim, by rendering this recitation as an additional method step:

"preparing a semiconductor wafer composed of an In-containing compound and superficially onto which at least one In-containing-compound semiconductor layer has been heteroepitaxially grown";

- d) Add the limitation "but is not greater than about 60 V" to the recitation of the maximum voltage among the applied voltages mentioned in the last-recited step;
- e) Revise the claim 14 recitation,
"filling the cell with one liquid selected from an aqueous EDTA solution containing 80% or more EDTA, liquid tiron, and a metal Ga melt"
to,
"contacting a liquid electrode superficially on the wafer,"
as originally recited in claim 1; and
- f) To strike the language, "without using photo-etching," because it is believed that this language was not being read as a limitation anyhow.

In sum, the gist of the amendments to claim 14 lies in above items b), c) and d). In particular, two steps have been added to the claimed method, but merely by shifting recitations from the preamble of claim 14 in its previous form, to the body of the claim now.

As to above item e), it is respectfully submitted that the patentability of the present claims does not rest in limiting the composition of the liquid electrode, and that therefore, the previous claim 14 recitation, "filling the cell with one liquid selected from an aqueous EDTA solution containing 80% or more EDTA, liquid tiron, and a metal Ga melt" has been put back to the generic recitation of original claim 1, and the limitations on the liquid electrode have been returned to the dependent claims, to give Applicants the full scope patent protection that is their due.

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Accordingly, Applicant courteously urges that this application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested. Favorable action by the Examiner at an early date is solicited.

Respectfully submitted,

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